RAILER® Version 5.0 User Guide

by

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RAILER® is a copyrighted product. By installing you agree to subscribe for a separate copy for each track network applied. Subscription fees are used to fund the RAILER Support Center and fund software maintenance.

Installing RAILER

1. Installing RAILER involves stepping through the RAILER "Install Wizard." If installing from disk, insert disk 1 into the 3.5" drive. If installing from a compact disk (CD), insert the CD into the CD drive.
2. If your system uses Windows 3.1 open the file manager, go to "File", and select "Run." When the "Run" screen appears type "a:\setup" and click OK.
3. If you have Windows 95, click on the "Start" button and select "Run." When the "Run" screen appears, type "a:\setup" and click OK.
4. You will be asked about the drive you desire RAILER to be installed. Note: RAILER GIS files (discussed later) must be installed in a directory called RAILER.GIS on drive C.
5. You will also be prompted as to a "Typical", "Compact", or "Custom" installation. "Typical" installs RAILER for both single computer and network applications. "Compact" is the same as "Typical" at this time. "Custom" will be used for network setups. RAILER ("Typical" installation) would be installed on the "Server" and the system files ("Custom" installation) would be installed on each "Client" computer.

Installing RAILER GIS

1. RAILER GIS usage requires that the ESRI ArcView GIS software (Version 3.0a or later) be installed on your computer. Without this, RAILER GIS will not function.
2. Installing RAILER GIS also involves stepping through the RAILER GIS "Install Wizard." If installing from disk, insert disk 1 into the 3.5" drive. If installing from a compact disk (CD), insert the CD into the CD drive.
3. From Windows 95 (Note: You cannot run RAILER GIS in Windows 3.1) click on the "Start" button and select "Run." When the "Run" screen appears type "a:\setup" and click OK. Note: RAILER GIS will be automatically installed on your "c" drive. If you move it to another drive, RAILER GIS will not function properly.
4. When you are prompted for a destination directory, you must cite the directory where RAILER 5.0 resides. This tells RAILER GIS where to go and retrieve RAILER data to display.

Opening RAILER

1. From your file manager select the directory c:\railer50. Note: If you installed RAILER to a drive other than "c", that directory will precede the \railer50.
2. One of the files located in this directory is railer.exe, double-click on it.
3. The RAILER Logo will appear. Click OK. Note: It may take a few seconds to load the database. The "hourglass" may be displayed for a number of seconds. This is normal.

Selecting the Database

1. Before you can work with RAILER, first you must open a database. "Example1" and "Example2" are sample databases and are provided as learning aids. "Example1" has more variety, but "Example2" has more GIS.
2. From the menu bar at the top of the screen select "File" and then "Select Database." A window entitled "Select Database" will appear.
3. From the C:\railer50\data directory (or installed directory, if different) select "example1.mdb" (or example2.mdb) and click OK.
4. Your working database is now the Example1 (or Example2) database. Once your working database is set, you will no longer have to select it. Changing to any other database, if available, will require you to repeat steps 2 and 3.
5. You can create a new database by selecting "Create Database" from the "File" toolbar. You will be prompted for a database name. The default is "new.mdb." You may name it anything logical, but ensure that you use the .mdb extension.
6. You are now free to move around as you wish through the button bar located below the toolbar at the top of the screen.
7. The GIS and TRACK buttons are inactive until you go into Toolbox and set up those applications. Setup is explained under "Toolbox."

Enable Edit

1. There are two operating modes within RAILER: "Edit" and "Read-Only." "Edit" mode allows you to add, change and delete data. Depending on where you are in RAILER, you can also copy records (i.e. tracks, inventory, M&R plans, M&R policies, and M&R MOAs). When you are in "Read-Only" mode you can only view the data, not change it. The mode status is displayed in the lower left corner of your screen.
2. In order to get into "Edit" mode, you select "Edit" and then "Enable-Edit" from the toolbar at the top of the screen. When this option is checked you are in "Edit" mode.
3. The default mode is "Read-Only". Therefore, if you move between different RAILER operations you will revert to "Read-Only" when you move. For example, if you go from Inventory Information to Inspection Data you will

revert to "Read-Only" for inspection even if you were in "Edit" mode for inventory.

4. Throughout the different screens in RAILER certain fields will be required to have data. If the field is left blank and if you try to save, RAILER will give a message telling what field needs data. You cannot save unless all mandatory fields have data.
5. If you have multiple users, it's possible to restrict who has the authority to change your data. Thus, given users can be limited to "Read-Only." This is explained under "Toolbox", below.

Report Choices

1. Much information is directly available from the screen. Simply use the appropriate Button Bar selection and navigate accordingly.
2. Condition Reports (Condition Index, Track Standards, and ISR) are pre-set and available from the "Reports" option from the Button Bar. No other reports are available from the "Reports" option.
3. Query based reports are available from most locations in RAILER. These are generated from the "Generate Reports" button found on many windows. The report types (e.g. inventory, inspection, etc.) are based on where you are in RAILER. For example, track structure information can only be found from the "Structure" tab from the "Inventory" button.
4. Sometimes tabs are "grayed" out in inventory and inspection. This means that no information is available for that particular track or segment. The query will not be able to be run from a grayed out tab with the following EXCEPTIONS: Track Structure (Inventory), Ties (Detailed Inspection), General (Turnout Inspection), Crossing Defects (Grade Crossing Inspection), and Alignment (Track Geometry Inspection). This is only due to an anomaly because these are the 1st tabs on the screen.
5. At certain locations (M&R Plan and Local M&R Policy) within RAILER, you will see a "Print Report" button. These reports differ from "Generate Report" because the query is not invoked. Also, a preset format is used specific to the report being printed. These reports are all discussed below under "Fixed Format Reports" and under M&R Plan.

Using Query

1. Opening the "Generate Report" will open a query screen.
2. Depending on where you are and what you may have already selected from a tab, a default query may be shown. If this default query is acceptable, you may accept it as is or expand on it. If it is not acceptable, delete using the "Clear All" button on the query screen and generate your desired query.
3. Your query choices are made from pick lists. These lists are derived from available information in the database.

4. There is a "bug" in the use of the drop lists in Windows 95. The list may be longer than shown, but a scroll bar will NOT initially appear. Choosing any item will make the scroll bar appear. If you desire to choose an item beyond the bottom of the box simply choose anything and when the scroll bar appears simply change your choice. This is a "bug" in the commercial software development tool used.
5. When stringing query choices together be careful not to ask something that will result in no report. A record count in the top right corner will tell you how many matches are possible with the query you made. If it goes to 0, try again, as you asked something not possible.
6. The "Comparison" choice consists of =, >, <, etc. choices. These mean "equal to", "greater than", 'less than", etc. These apply to both numeric and alphabetical criteria (e.g. Condition index greater than 60, rail weight less than or equal to 90, track category greater than A).
7. If you have a particularly long query that you would like to run often, you can "Memorize" it. Use the "Memorize" button on the query screen.
8. Once you have completed the query, hit the "Okay" button.

Report Viewer

1. The results of the "Generate Report" query and the pre-set reports are all viewed in the report viewer window. This window will automatically appear.
2. The window has a "Summary" and a "Details" option. Not all reports, however, have a summary. If a summary is available, the report viewer will open with the summary. If a summary report is not available, the report viewer will open with "Details." Even if summary is not available, the summary button is present. If it is hit, a blank screen will appear. If this occurs, simply go back to "Details."
3. A variety of views are possible for many reports. These can be turned on or off at your discretion. This is done by using the "Select Views" button and making the appropriate selections.
4. For the table reports, columns can be resized and the order changed. This is done by using the left mouse button. Hold on column or column line (as appropriate) and move it right or left, as desired. To save the new settings hold the right mouse button down while the mouse arrow is in the grid. A window will appear with several choices. Select "Save Layout." Depending on the color settings for your computer, the column headers may change to different shade. Also, please note that in the lower right corner of the grid there is a black vertical bar between the arrow and the corner. If you place your mouse arrow over the bar and hold down your left mouse button, you can place columns to the left of your left margin. This, in effect, freezes them when you use the scroll bar. You can, for example, freeze the position of the Track ID for reports that have many columns necessitating scrolling.
5. Holding the right mouse button down while the mouse arrow is in the grid gives a number of other options, too. These include "Zoom", "Change Sort

Order", "Search for Record", and "Print Table." The other options are more advanced and can be experimented with. "Zoom" will allow the report to fill more of the screen, "Sort" allows the records to be sorted, as desired, "Search" allows you to dig into a large table to find the desired record, and "Print" will give you a hard copy.

6. "Print Table" opens a window that allows you to see what the report will look like. Note that it will look somewhat different than the screen view of the same report. You may need to adjust the column widths to get the column headers to fit, etc. Hitting the "Print" button will generate the hard copy. "Export" will send the report to an EXCEL file. This is useful as it allows you to edit your final report, as desired.
7. Holding the right mouse button down while the mouse arrow is on a graph gives a number of options, too. They are "Zoom", "Save Layout", "Edit Properties", and "Print." "Zoom" functions just like for tables. "Edit Properties" allows you to change the graph type from bars to pie, etc. "Save" and "Print" are self evident. From "Zoom", you have the further option to print and to "Copy to Clipboard." This last option let s you place the graph into some other application (e.g. Paintbrush, WordPerfect, etc.).
8. Unfortunately, the commercial software used in report viewer will not permit "Comments" to be printed. Comments can be viewed on the screen by clicking on the comments button. Note: Not all areas of RAILER permit comments. Also, if the comments box is grayed out (read-only), no comments exist.
9. The "Condition Index", "Condition Standards", and "ISR" reports allow you to view a different graphic depending on the line chosen on the summary grid. Simply highlight the desired line. The result is graphed. Some other summary reports generated from the query allow you the same option.
10. Inspection reports utilize a "link" feature that will show multiple grids on the screen at the same time. These linked grids are denoted with a red {link} in the table header. To reduce screen clutter any or all of these grids can be turned on or off from the "Select Views" button described earlier. The linkage allows you to highlight a line on the top grid and specific information will show up (if available) on the linked grid.

Fixed Format Reports

1. Pressing the "Print Report" button at certain locations will let you print a report using a commercial reporting package called "Crystal Reports." These reports all have a fixed format and are all currently associated with M&R planning.
2. Pressing "Print Report" opens a window that permits you to make choices about the report. "Print" will print you a hard copy of the report. "Preview" allows you to see it on the screen. If sorting is permitted for that specific report, your sorting options will be shown in the "Sort by" drop box. You may also send this report to a file. Other options include selecting which

pages to print, the number of copies desired, and whether or not your copies are desired to be collated.

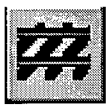
3. Print "Setup" will rarely be needed. Your existing printer settings are defaulted and the reports will normally run properly.
4. When you select "Preview" the report will be shown in the screen. Several buttons and certain information will be displayed at the top of the report. The series of buttons to the left of the printer icon allow to go back and forth to different pages on the report. The # of # lets you know how many pages there are and which page is being displayed. The screen scroll bar lets you scroll up and down the displayed page. The printer icon let's you directly print the report without having to go back to the pervious screen. The "envelope" button is inactive. The remaining button is a zoom button. This allows you to view the report at three different levels of magnitude. The remaining information refers to the number of items being reported.

Network Information

1. The Network Tab is where general network information is stored. To enter a new network, Enable Edit, then click on the "New" button. Fill in the appropriate fields and click "Save." By clicking on the "Details" button additional data can be entered. To edit existing data, Enable Edit and change the necessary fields and click on "Save."
2. The "Areas" Tab is where you define areas. (Note: RAILER does not require that areas are defined). To define or edit an area you must first be in Enable Edit mode. When in Enable Edit mode the screen shows a list of all the tracks in the database. To select which tracks goes to the area being defined highlight the track by clicking on it. Then click "Associate" which will move the Track from the left to the right box. All tracks listed in the right box are considered part of that area.
3. The "Track" Tab is where all new Tracks must be defined. In Edit mode, click "New" in order to add a Track. Fill in all the fields on the screen (Note: RAILER automatically fills in the End Station once you have filled in a Begin Station and Length.). If the track is going to divided into segments click on "Track Segments." You can then add segments the same way as adding Tracks.
4. Track information can be copied into another track. This is particularly useful when you have two or more tracks that are nearly identical. From a selected track, you need to enable-edit-copy and after you are prompted for the new track name, click on "save." The new track can then be edited, as necessary.
5. The track network Track Structure Condition Index (TSCI) is displayed on the network tab. Normal TSCI is simply the average of all of the tracks and/or track segments. The weighted TSCI is the same except the averaging is

"weighted" by the track and/or track segment lengths. You may experience an asterisk (*) following the TSCI value. This means that one or more tracks or track segments does not have an index computed. This is usually due to the addition of new tracks into the database, but detailed inspection data for that track does not exist.

6. Track and track segment information can be copied from one track to another. This is particularly useful when you have two or more tracks (or segments) that are nearly identical. From a selected track (or segment), you need to enable-edit-copy and after you are prompted for the new track ID, click on "save." The screen will then return to the original track (or segment). You can then select the new track (or segment) from the drop box and make any desired editorial changes.



Inventory Information

1. The inventory collected in RAILER is divided into ten different tabs. There is one tab for each of the track major components.
2. On each tab, there is a beginning location drop box. Any value shown reflects a change to inventory (e.g. track structure change) or the location of discreet inventory items (e.g. turnouts, grade crossings, etc.).
3. In Edit mode you can input all the necessary data in the same method as described for entering new tracks. For certain tabs, there is also the option to click on "Details" in which you can add certain additional information.
4. If RAILER is in the Read-Only mode certain component tabs will be grayed out if there is no component inventory in the database.
5. A common task will be to update the inventory records, as necessary, when improvements are made to the network. This includes upgrading rail weight, changing turnout size, installing culverts, and changing grade crossing material types. To delete existing inventory, select that item from the location drop list on the appropriate tab, go to "Edit" on the menu bar and select "Enable-Edit" then "Delete." When structure data are deleted, you may wind up with a gap in the records. Adjust any begin or end stations, as appropriate to plug the gap. If the gap exists when you try to close the window, RAILER will give you a warning message. Simply changing inventory requires that you "Enable-Edit", go to the appropriate data field, make the change, and save. Again, if you have changed stations for track structure, you may have a gap or an overlap. You will need to make the appropriate adjustments. RAILER will warn if a gap or overlap exists when you exit, if one exists.
6. Inventory information can be copied from one location in a track to another location. This is particularly useful when you have two or more items of inventory that are nearly identical. From the selected inventory item, you need to enable-edit-copy and after you are prompted for the new begin station

or name, click on "save." Any desired editorial changes can then be made to the copied inventory.

Inspection Data

1. After selecting the Inspection button, you get a drop list to choose which inspection type to view. Each inspection type is unique, but they are all viewed in the same manner. For input of inspection data RAILER RED is highly recommended, but data can be input on these screens while in edit mode. Using the "new" button creates a blank form with the default computer date ready for your input. There are six options for inspection. These are: detailed inspection, grade crossings inspection, manual geometry inspection, turnout inspection, safety inspection, and uninspected deteriorated.
2. Detailed Inspection is used to perform a thorough inspection on all components of the track except the turnouts and grade crossings. Detailed inspections affect track standards condition as well as the condition indexes.
3. Grade Crossing and Turnout Inspection are also detailed, but are listed separately due to the discreet location and identification of these components. The switch tie portion of the turnout inspection affects the Tie Condition Index (TCI). Ballast, rail, and non-turnout specific F&OTM defects are recorded under Detailed Inspections, above. These inspections affect the track standards condition.
4. By using the "Inspect by Sample" option from the detailed inspection window, you can reduce your inspection effort considerably and produce condition assessment results sufficient for long range M&R planning. This is known as a "Condition Survey" and is well documented in the RAILER literature.
5. Safety Inspection is used when the inspector is just checking for "critical defects." All of the defects are still listed, it is up to the inspector to decide what is "critical." Safety inspections ONLY affect the track standards conditions. Since the safety inspection information can span many dates, RAILER has an "Insert" button that allow you to insert inspection records in the proper sequence should some have been missed.
6. Geometry Inspection is where all manual geometry inspection is information is recorded.
7. Uninspected Deteriorated is used when a track is in extremely poor condition. Often, it would be a waste of inspector time to inspect everything. If a track is marked "uninspected deteriorated", it will be assigned the lowest condition level as per the applicable standards and a TSCI value of 0. The assumption is that the only truly valid M&R activity is "Reconstruct."
8. Any detailed inspection defect that has a work order (e.g. service call) generated will automatically be duplicated on the safety inspection screen for

ease of tracking. The assumption is that any defect with a work order is a safety defect.

9. Defects found by detailed inspections and fixed by work order will result in a condition index recalculation as of the "fixed" date.
10. Defects found by either detailed inspections or safety inspections and fixed by work order will result in a track standard condition recalculation.
11. Inspectors can override RAILER computed condition levels from safety inspections. The inspector only needs to click the "Condition Level" cell on the grid and choose the appropriate condition level. Note that these will be shown in *italics* to indicate an inspector override.
12. All safety inspections involving measurement criteria will have the track standard in *italics* as RAILER does not process measurement data from safety inspections.
13. The safety inspection screen allows the user to keep a running record of defects found and corrected through work order. As these lists grow over time, you can take advantage of the three check boxes "Show Unfixed Defects", "Show Fixed Defects", and "Show No New Defects" to filter your list. Of course, any given record (line) can be erased through the "Delete" button.

Work History

1. Work History allow you to record what work has been completed on the network, except for work orders (service calls). Recall, a work order history is maintained under "Safety Inspections."
2. Normally, this history is automatically updated from the M&R Plan (see below under Tab 8 (Plan Status)).
3. History information can also be entered directly. To do so, simply use "Enable-Edit" and enter the appropriate information.
4. Sometimes the actual work completed will not match the "planned" work defined with a M&R plan. This may be due to "changed conditions" or some other factors. Thus, when the project is transferred to work history from the M&R plan, some editing may be necessary. To meet actual conditions you can edit all fields, including details. To do so, simply use "Enable-Edit" and edit the appropriate information. To add new components, etc. work left-to-right beginning with the Track ID and when you click on the appropriate cell in the grid, appropriate drop lists give you your choices. Quantity is a simple numeric field that you must enter.
5. When the work history record is updated, the condition indexes and track standards conditions will be recomputed as of the work completion date.

6. Depending of the policy used for the project, the recomputed condition indexes and track standards conditions may not reflect the actual conditions. This would only be a concern when the policy calls for replacing one defect with another. An example of this is when a cluster of five bad ties (with or without joint ties) is repaired with a policy of replacing a single tie. Depending on which tie is replaced, a different condition index and track standards condition will result.

Maintenance & Repair (M&R) Plan

The M&R Plan button is where you create projects and develop M&R plans based on those projects. Note: Depending on the number of segments chosen, the number of defects present, the condition levels, and the speed of your computer, several minutes may be needed to process information at various steps. **Be patient** while the hourglass is displayed. The basic flow of the M&R screens is as follows:

Tab 1 "Scope"

1. On Tab 1, "Scope," you define a plan and perform a query to select which tracks and segments to include. The plan "Composition" allows you to create the plan in "Projects" or by "Track/Segment/Components." The "Track/Segment/Components" mode is recommended when you are unsure how to cluster tracks, segments, and components into logical projects. You can develop an M&R plan based on "Track/Segments/Components" and view the results in Tab 7 (Plan Data). From this you can see how best to logically cluster certain tracks, segments, and components into discreet projects. You can then go back to Tab 1 (Scope), shift to "Projects" mode, and create the projects, and finalize the plan. These various steps are discussed below. Note: That while in "Track/Segment/Components" mode, Tab 4 (Projects) is grayed out. Also, while in "unconstrained" budget mode, Tab 6 (Budget) is grayed out and if the plan is only a draft, Tab 8 (Plan Status).
2. From this tab you can also decide the extent of the work to consider. "Local" M&R only considers work actions for defects found during inspection. "Global" M&R considers major rehabilitation, capital improvements, and routine maintenance needs. When in "Global only" mode, Tab 2 (Condition Trigger) is grayed out since local defects are not considered.
3. Once the basic scope is set, you need to select which track and segments to include in the plan. This is done through the "Select Track Segment" button. A new screens pops up listing all the tracks that have the components that were selected on the left. You can choose "Select Criteria"

to query which tracks to include in plan, or by highlighting the track and clicking "Associate" you can move the desired tracks and segment tracks into the right box. Any track and segment listed in the right box will be included in the plan. Choose "Save" after selection is complete.

4. The "Details" button can be clicked on to see what tracks and components have been chosen for the plan.
5. The "Comments" button allows you to place additional notes or comments to view later.
6. After selecting the track segments and double checking to make sure you have selected the correct options, you are ready to go to Tab 2.
7. You can run reports for a selected plan. Using the "Print Report" button, you will see a "Select Report Type" window appear that gives you a choice of one of three reports. These are M&R Summary, M&R Spreadsheet, and M&R Details. Using the radio button, you can select which one you desire. The first two reports provide information for all tracks and track segments included in the plan. They display the same basic information, but in varying degrees of detail. The M&R Spreadsheet Report also has a graphic display. The graph will be generated by default, but if you do not desire this, uncheck the "Print Chart with Report" box on the Generate Report window. You can choose the style of the chart (four options: two are vertical bar and two are pie charts) from the "Chart Type" button. The M&R Details report is only run for one track segment at a time. When this report is selected, a drop box will appear that allows you to select which track segment to report. Note: the "Print Report" button will be grayed out until the plan is saved.
8. Plans can be copied. This is handy when you want to use an existing plan as a starting point for a new plan. From an active plan, enable-edit-copy and after you respond to the new plan name, click on "Save."
9. All plans have a date and the plan will reflect track conditions and inventory as of that date. As time goes, on it's possible that track conditions or inventory will be different. For example, a track inspection may have occurred since the plan was prepared. These changes may or may not affect the plan. In "Read-only" mode, there is no effect since all you are doing is reading an existing plan. If you desire to change a plan you must go to "Edit" mode. Anytime changes may occur due to updated information, you will be given a warning message after "Edit" mode is invoked. If you are working with Track/Segments/Components the plan will automatically update due to possible condition changes, costs, etc. If you are working with projects, they will not automatically update. Project updates will only be made by opening them in "edit" mode. If you do, any new defect changes, etc. will be reflected in the project. If you do not desire the changes to be made, exit, and return to "Read-only" mode. You may copy the plan to retain a history of plan development and still allow updates to occur. As long as you do not re-save the old plan, the old plan will be retained unchanged.

Tab 2 "Condition Trigger/Trgt"

1. Tab 2, "Condition Trigger/Trgt," has two fields that must be filled. The Condition Trigger field sets the track standard condition level for triggering M&R action.
2. Condition Target is the track standard condition level at or above which defects will not be included for repair in the plan.
3. Your primary track standard is used for M&R planning. If a different standard is desired, it must be selected from the toolbar "tools" option.
4. This tab serves a filter to the tracks and segments selected in Tab 1. You may have selected a track segment in Tab 1 with a condition that by the criteria of Tab 2 would exclude it from the plan.

Tab 3 "Policies"

1. This tab is used to set the policy defaults, MOAs, and global work actions (GWA) to use in the plan. They can be changed project-by-project, but by setting defaults, effort can be saved later.
2. If you are in "Local M&R" mode from Tab 1, the global button is grayed out.
3. If you are in "Global M&R" mode from Tab 1, the local M&R policy drop box is grayed out.
4. You **MUST** first create at least one local M&R policy (except when in Global M&R mode) and have a MOA established to develop M&R plans. If you have not created these, the drop lists will be empty (blank). MOAs and policies are created under "Toolbox - Utilities."
5. Clicking on the "Global M&R Selection" button will bring up available GWAs for possible application in the plan. The GWA selection list is a filtered list. It contains only GWAs that have costs established (accomplished under "Toolbox-Utilities"). Also, the list is filters based on the component selection on Tab 1. For example, if your plan is limited to tie work, you will not see rail GWAs on the drop list.
6. The GWA list contains several columns. The first is the listing of available GWAs. The second is the "Include?" column. The default is "no." If a GWA is desired, clicking on the column cell will change the "no" to a "yes." The remaining columns refer to size and weight inclusion. Weight refers to rail weight and size refers to turnout size. This feature allows you to selectively apply GWAs. For example, you desire to use the GWA "Replace rail with 118 lb/yd rail" and apply it to a track with 100 lb/yd rail, 118 lb/yd rail, and 132 lb/yd rail. If you only select "Replace Less Weight" then only the 100 lb/yd rail will be replaced. "Replace Same Weight" would result in the 118 lb/yd rail being replaced. You may select any logical combination. Selecting all choices would replace all rail with 118 lb/yd rail. This same logic is used for turnouts. The added feature is that turnout size is also included. You can, perhaps, apply a GWA to replace #6

turnouts with #8 turnouts. RAILER would assign this GWA to only #6 turnouts.

7. Multiple GWAs are permitted for a given project. However, RAILER makes no assumptions as to the validity of any GWA or combination of GWAs selected for the plan. For example, if you choose to replace turnouts with 112 lb/yd rail and replace turnouts with 118 lb/yd rail, RAILER will use both.
8. Track reconstruction GWAs are listed under "rail."
9. Refer to the Appendix for a further discussion on Global Work Actions.

Tab 4 "Projects"

1. Tab 4, "Projects," is an active tab only if the Projects button was selected on Tab 1. The projects screen shows all the projects that were created for this plan.
2. To add a project click on "Define Project." The Define Project screen appears. You can define projects and select which tracks, segments, and components to include in the project by highlighting the desired combinations and clicking ">>" to associate these to your project. Should you change your mind, highlight the appropriate tracks, segments, and components you wish to remove from the project. Then click "<<" to remove these from the project and allow them to be included in another project. You also need to declare the funding type (one per project). This is a user created list. You should also verify that the Local Policy, GWA, and MOA (all set as defaults on Tab 3) are desired for this particular project. After defining each project you must save it.
3. Refer to the description of policy, MOA, and GWA selection under Tab 3, above.
4. It's not necessary to have all of the track, segment, and component candidates be associated with projects. You may desire to simply leave some of these items out of the plan. Any tracks, segments, and components not placed into projects will not be considered further in the plan, but you can go back at a later time and include any of these items.
5. After defining the projects exit the screen and return to Tab 4. You will see that all of the projects will be listed.
6. If you wish to change the calculated cost for a project, you can put any value in the "User Defined Cost" column and it will automatically override the one calculated.
7. The "Details" button gives you the project details for any project highlighted on the projects grid. To highlight, move your cursor to the left edge of the leftmost cell of the project that you want to see details. You will see a checkmark (√) appear. Click your left mouse button and the row will highlight.
8. You print a copy of any project shown under "Details" by clicking the "Print Report."

9. If you desire to edit an "existing" project you will need to press the "Define Project" button from Tab 4 and select the desired project from the project drop list. If any of the components in the project have been inspected since the project was created, you will receive a warning message that this has occurred. Once you have made your editorial changes, the "Save" button will become active and if you wish to save the changes, click "Save." Note: If you simply desire to incorporate the results of the latest inspection, you will need to activate the "Save" button. Simply de-select and re-select a track or track segment, then save.

Tab 5 "Ranking Values"

1. Tab 5, "Ranking Values," allows you to prioritize projects. First, you should click on "Select Criteria/Weightings" button. The Criteria Set screen will pop up. You can select the default from the "Criteria Set" field or you can click on "New" and then "Choose Criteria." A list of criteria will pop up and you can select which criteria to include in the analysis. Once the desired criteria have been saved you can weight the criteria by importance. To do this, move the slide bar to the desired weight for each criterion. When done make sure to name the "Criteria Set" and click on Save. The weights are on a scale from 0-10. You are ranking the criteria as to importance.
2. Next, you should click on "Impact Factor Set." You then select the Criteria Set and Criterion that were set up previously. You can accept the Default Impact for each Criterion or you can input your own Impact Factor Set. Be sure to name and save before exiting.
3. Next click on "Component Importance." A screen showing all the components with a default importance rating. You can accept the defaults or input your own values in the "User Defined Importance" column. The user defined importance value entered will override the calculated importance. Once completed choose save and exit. Normally, you should not have to edit these, as they were derived from a group of experts.
4. You then click on "Define Analysis Matrix" to actually prioritize the projects in the plan. You select settings that were defined in previous screens and the plan is prioritized. RAILER also allows you to override the calculated priority. To do this just click on the Priority Override field for the specific track/segment/component or project (depending on mode). Then select "Compute Project Priority" to recompute the new priority. When done choose save and close.
5. Then select the Analysis ID on the main screen. If the priority override was used the project priority that was changed will be shown in *italics.* All following priorities will automatically be adjusted accordingly.

Tab 6 "Budget Values"

1. Tab 6, "Budget Values," is an active screen only if the "Constrained" button is selected in Tab 1. There is one column for each year of the plan horizon specified in Tab 1. One row in the grid is reserved for each funding type assigned to projects in Tab 4. When in "Track/Segment/Components" mode the funding type is simply listed as "default."
2. To change the budget, click on the appropriate year and budget cell. Then you enter the amount (dollars) for that year.

Tab 7 "Plan Data"

1. Tab 7, "Plan Data," allows you to see the results of the plan. The plan is defaulted to list the projects by title. The "Sort" button will sort the list by priority and year. Note: When in "Track/Segment/Component" mode, project titles are defaulted to include the Track ID, Segment ID, and Component name.
2. If the budget is unconstrained, all projects will be listed in the first year. This is particularly handy when looking at the backlog of work.
3. The "Compute Work Years" will compute the years to perform each project according to the budget set in Tab 6. If the projects cannot be funded with the budgeted amount of money, the projects that exceed the budget will be highlighted in red.
4. RAILER allows you to edit the project year on this screen if you desire to put it into a different year. The new year will be shown in *italics.*
5. "Reset Years" will reset the list to the original years calculated.
6. "Inflation Factors" allow you to set the inflation for the years included in the plan horizon. The value should be entered as a decimal. For example, if the inflation is considered 2.1% it should be entered as 1.021 in the field.
7. You can print a copy of the plan by selecting "Print Report." If the "Print Report" button is gray, first save the plan then run the report.

Tab 8 "Plan Status"

1. Tab 8 is invoked when a plan is considered final. It allows you to track projects through the execution phase.
2. Various data elements are available to you to help you track projects. These include such items as Work Request Number, Project Order Number, etc.
3. Project status is chosen from a drop list.
4. You may transfer completed projects to work history. To do so, simply highlight the desired project and click on the "Transfer to Work History" button. All Tab 8 and project details information will be transferred. Note: You must have a completion date entered before the project will transfer.
5. To highlight, move your cursor to the left edge of the leftmost cell. You will see a checkmark (√) appear. Click your left mouse button and the row will highlight.

6. You can print a copy of this screen by selecting "Print Report."

RAILER GIS

1. RAILER GIS allows certain RAILER data to be displayed spatially on your digitized and segmented track maps.
2. The RAILER GIS button is defaulted to gray out. In order to activate it, you must have commercial ArcView Version 3.0a (or later) software (from ESRI) and the RAILER GIS software. ArcView does not come with RAILER and must be acquired separately. RAILER GIS is provided with your RAILER installation set. If you have not installed RAILER GIS yet, you will need to do it prior to running RAILER GIS set (see above - "Installing RAILER"). If you have attained the ArcView software you must enter the "Toolbox" and choose "Setup Applications." Please see below for the procedures on setting up the application.
3. Once the button is active and you click on it, ArcView will open and the appropriate GIS "project" should start.
4. Upon launching GIS a few moments are needed for the ArcView tables to join your RAILER database tables. The status of the joining will be apparent on the bottom of your screen. This joining is necessary to ensure that the most current database information is being displayed.
5. Anytime you are adding new information to your database, you should ensure that the GIS application is closed otherwise the new data will not be displayed. Later, upon launching GIS, the new information will be shown.
6. If you have more than one RAILER database and if more than one has an ArcView "project" developed, you must change to the corresponding "project" (accomplished in "Setup Applications") should you change RAILER databases. An ArcView project for "Example" is provided in your RAILER installation set.
7. Refer to the ArcView user guide for more information on ArcView operations.

TRACK Structural Analysis

1. The TRACK structural analysis program is a separate application available from USACERL. It's a computerized analysis for determining the structural adequacy of your track and can assist in the design for upgrading your track structure.

2. "Setup Applications" must be run from Toolbox in order to use it with RAILER.
3. Once button has been activated, press it. This will open the TRACK/RAILER interface screen.
4. While in Edit Mode the user can formulate Groups to analyze in TRACK. By selecting "New" the user can type in a name for Group ID. Then by pressing "Insert" and double clicking on the first row Track ID a drop list of all the Tracks in the current RAILER database will show. Choose a Track and Segment. Then choose "Save." Now press "Execute TRACK."
5. TRACK will then be opened. Once in TRACK, you can choose which segment to analyze and then save the analysis ID.
6. Refer to the TRACK user manual for more detailed instructions on the use of TRACK.
7. Once you have returned to RAILER you can choose "Details" to see the results of the TRACK analysis that were saved. The Details screen is just a read-only screen. No editing can be performed here. Any field that is in yellow represents a structural parameter used in TRACK that is not the same as the parameter in RAILER. This will guide you in planning M&R work activities.

Reports

1. The Reports button gives a drop list of "Standard Reports" that RAILER has set up in the Report Viewer. The reports currently available are Condition Index Report, Standards Report, and Installation Summary Report (ISR). All functions used described in the Report Viewer selection can also be run with these reports.
2. Occasionally, when you attempt to run any of these reports, you will see an "empty" table and graphic. If this occurs, simply attempt to run the report again.
3. Never attempt to run one report without first closing any other open reports. Otherwise, the report may not run or it will produce an empty report.

Toolbox

The Toolbox allows you adjust various RAILER settings.

Password

1. If the password is enabled in "Configuration" then "Password" will become an active radio button. By choosing it and continuing you will be given the option to change passwords.
2. You must first type the old password and then the new password twice for safety reasons.

User

1. By making "User" the active radio button and clicking on "Continue" a new screen will pop up.
2. You can add or delete users by clicking the appropriate button.
3. Access rights can be given to each user. Super user is allowed to do anything in the program, including creating and deleting other users. (NOTE: There must always be at least one super user for each database. The other options include those who can modify data to certain limits.)

Setup Applications

1. If you have TRACK or RAILER GIS you can choose "Setup Applications."
2. RAILER GIS is a USACERL developed GIS application using commercial ArcView Version 3.0a (or later) software (from ESRI). To setup first select "GIS" from the application drop list. Then press the "Browse" button. The "Select Application" window will open. Select "ArcView Project (*.apr)" from the "List Files of Type" drop list. From the RAILER.GIS directory (from the applicable drive), select the applicable .apr (e.g. example1.apr). Once done, press the "ok" button to activate and close the window. RAILER GIS button will then become active on the button bar which allows you to access this program directly from RAILER.
3. TRACK is a USACERL developed structural analysis program. To setup first select "TRACK" from the application drop list. Then press the "Browse" button. The "Select Application" window will open. Select "Application (*.exe)" from the "List Files of Type" drop list. From the TRACK directory (from the applicable drive) select "track.exe." Once done, press the "ok" button to activate and close the window. The TRACK button will then become active on the button bar which allows you to access these programs directly from RAILER. The TRACK button will then become active on the button bar which allows you to access this program directly from RAILER.

Configuration

1. By clicking on "Configuration" and choosing continue you will be allowed to set preferences, including enabling/disabling the password, bell on error, pop-up tips, and system units. Currently, only "English" (track-feet stationing) units are used.
2. Currently, password and the bell options are the only working preferences.

Maps/Plans/Photos/Images

This is currently inactive.

Utilities

"Utilities" encompasses three areas; M&R costing and policies, export and import of cost and policy information, and general category for miscellaneous tasks.

M&R Costing and Policies

1. Before you can add unit cost information, you must first create a Method of Accomplishment (MOA) by selecting the "Edit MOA" radio button, then "continue." A list will appear and you can type in a descriptive name (e.g. in-house, contract, etc.). Eventually, all of your possible MOAs should be listed for possible use in M&R plans.
2. After adding your MOAs you need to define costs by clicking on "Local M&R Costs." A new screen will pop up. (Note: Because of the size of this table, it may be somewhat slow to appear). By clicking on the checkbox of each component you can bring up all of the defined work actions associated with that component (the checkbox only serves as a filter). You can then fill in the costs for the work actions that the facility performs. Simply click on the appropriate cells on the grid and type in your unit costs. If the cost is left blank, that work action will not be included in the policy. When finished assigning costs save and exit. You will notice that costs can be added for each of the MOAs that you declared. It's only necessary to provide unit costs for the work actions that you plan on doing.
3. Global M&R costs are entered the same way. Note: The GWA list is very long and several seconds are necessary for the list to load. This pause is normal.
4. The next step is to create local M&R policies. This is done by selecting "Local M&R Policies." This screen lists all the possible defects stored in the RAILER database that can be found through inspection. By clicking on the field to the right of the defect a drop list will appear that lists all of the costed work actions associated with that component. Choose an appropriate work action for the defects to be fixed. Once complete, save and exit. Note: "Do Nothing" and "Corrected by Other Work" are valid work actions. Any

defects with no work action assigned will not be costed and corrected in a RAILER M&R project or plan. These will show up on detailed reports with the work action "No Policy Exists." Multi-policies are encouraged. This will truly tailor your planned work activities to particular situations. Each project can have only one local M&R policy assigned to it, but any created policy can be applied to a given project.

5. MOA cost lists and policies can be copied. This is handy for creating various policies that may be similar, but contain differences. From a selected policy , you need to enable-edit-copy and after you are prompted for the new policy name, click on "save." Then perform any needed edits to the new policy. The same is true for the MOA cost lists.
6. You can print your policies from the "Print Report" button. This is a pre-formatted report. This report can be lengthy and take a few minutes to run. This pause is normal.
7. Costs and policies are database dependent. Should you have multiple databases (e.g. networks) on RAILER, you will need to create the appropriate cost lists and policies for each. You can facilitate this by using the export/import feature described next.

Exporting and Importing Cost and Policy Information

1. Exporting cost and policy information will bring up a window with a drop list of MOAs and policies. Simply select the desired one to export. When prompted for a filename (*.mdb) you may call it anything you desire, but you must use the .mdb file extension.
2. When importing, you will be prompted for the name of the file to import. This will be a .mdb file.
3. Note that "Example1" has costs and polices, whereas "Example2" does not. You may wish to copy those from "Example1" to "Example" as a learning experience.

General Category for Miscellaneous Tasks

1. RAILER is designed to let you use three track standards simultaneously. One is the primary standard and two are secondary. The primary standard shows up in various locations within RAILER. Note: You can see condition results for the other two standards from the "Reports" button and choosing "Standard Level." By selecting the appropriate views, you can see the condition of your track and/or track segments against all of your standards. You can change the primary standard by selecting one of your secondary standards or from a standard not previously used. If you elect to use a standard that you have not previously used (primary or secondary) you will have to recalculate condition levels. Simply taking a standard from secondary to primary will not require a recalculation. Note: If you change the standards (add or subtract) and you are using RAILER GIS, you will have to update RAILER GIS, as well. Refer to Appendix B for details.

2. Recalculating condition levels are usually only used when the database is originally setup, or if you would want to change the active standards. Note: Recalculating condition levels will take anywhere from a few minutes to a few hours depending on the size of your network and the amount of inspection data available.
3. Merge database will be used when you are expanding your database through further RAILER implementation. If you are implementing RAILER in phases (typical for large networks), it is strongly recommended that you create a new database for each phase. Once the database is cleaned up, it should be merged into the existing database. You will be prompted to name which database will be merged into which. After merger, you will be alerted to any discrepancies. For example, your merging may combine two tracks with the same name. This may be valid, but the begin and end stations may result in a gap due to error. You will be prompted to this fact.
4. Converting a Version 4.1a database to Version 5.0 is a "one time" issue. Once your database is converted, you will never need to convert it again. Place your Version 4.1a database in your RAILER data directory. Click on the "Convert RAILER 4.1" and "Continue." Follow the instruction as displayed. If, after converting, the track standards conditions do not appear, reset these as discussed under (1) above. Note: If you are working in a Windows NT environment, the conversion may fail. If so, work in Windows 95.

Menu Bar

The "Menu Bar" resides above the "Tool Bar" on the main RAILER window.

File

1. File is used to create databases, select databases, and allow you to open various RAILER windows.

Edit

1. Edit allows you to enable or disable "edit" mode, delete records, and copy records.

View

1. When enabled, view allows you to open ArcView GIS. This has the same function as the "GIS" button on the tool bar.

Reports

1. This feature has the same functionality as the "Reports" button on the tool bar.

Tools

1. The RAILER RED import/export allows you to associate and disassociate tracks to export to RAILER RED. This is the same functionality described for creating Network Areas and M&R Projects.
2. You can also enter the toolbox directly from here.

Window

1. This feature allows you to arrange the ordering and placement of multiple windows on your screen.

Help

1. All help features are currently inactive.
2. The "About RAILER" feature is active and displays the RAILER disclaimer, acknowledges sponsors and developers, and tells you where you can obtain technical support.

Miscellaneous

1. Comments are allowed in a variety of locations. Where applicable, clicking on the "Comments" button brings up a memo field.
2. When in "Read-only" mode, if comments were not previously entered, the "Comments" button will be grayed out.
3. Certain features may be inactive on the menu bar, button bar, and within the various RAILER modules. When inactive, they will be grayed out.

Error Messages

1. Occasionally, when you attempt to access various areas of RAILER, you may receive one or more error messages. This is due to certain data tables failing to fill properly. The message is typically, "Unexpected Error #91 Occurred in LoadNetDefn(). Object Variable Not Set." Simply exit RAILER and begin again.
2. If any error message persists, contact the RAILER Support Center. The Points-of-Contact and phone numbers are listed under "About RAILER" within "Help."

Database Back-Up

1. It is recommended that you do this weekly.
2. Simply copy your database (*name.mdb*) to a floppy diskette, tape, or another drive.
3. See your computer administrator for help, if necessary.

Installing RAILER RED

1. To install RAILER RED you must be in DOS mode of the pen-based computer. Once in DOS mode, change to the root directory (c:\).
2. In order to install correctly there must be no current directory named c:\rred. If there is, you must move the contents of that folder and delete the folder.
3. After making sure there is no current \rred\ directory you should insert the RAILER RED install disk into the floppy drive. At the c:\ prompt type "a:install a: c:." This will install the contents of the a: drive onto the c: drive.
4. To start RAILER RED type "rred" at the c:\ prompt.

Importing and Exporting From RAILER and RAILER RED

1. To transfer new inventory data from RAILER RED to RAILER you should select "IMPORT/EXPORT" from the main screen in RAILER RED. Then choose "Export Inventory Data." You are then asked which drive to export the data to. Select the appropriate drive and select "Okay." RAILER RED will prompt you to make sure there is a disk in the drive. Click "Okay" and the data transfer will proceed. RAILER RED will prompt to delete all the data that was just downloaded. It is recommended that this only be done after making sure the data transfers correctly to RAILER.
2. Insert the disk into the computer that has RAILER. Under the "Utilities" menu, choose Import RAILER RED data. A screen will pop up that shows all tracks that can be imported. Highlight the tracks that should be imported and click "Associate." After selecting all correct tracks click "Import."
3. To transfer inventory data to RAILER RED so that inspections can be performed choose Export Data to RAILER RED from the "Utilities" menu in RAILER.
4. A list of all the tracks in the database will appear in the left box. Highlight all the tracks to be inspected and click on "Associate." Then click on "Export." The data will be exported to the designated drive (NOTE: the a: drive is always the default and can be changed by clicking on "Browse").
5. In RAILER RED, click "IMPORT/EXPORT" and then click "Import Inventory Data." It will again prompt you for the correct drive.
6. Exporting RAILER RED inspection data to RAILER is exactly the same except you just choose inspection instead of inventory.

Appendix A - *Global Work Action / Local Work Activities / Defect / Inventory Interaction*

Local Work Activities: Specific actions taken to correct track defects found through inspection. These are referred to as "local" because given defects are found at specific (localized) locations in the track.

Global Work Actions: Actions taken to entire components within the boundaries of tracks and/or track segments independent of the defects found during inspection. GWAs are particularly useful for planning preventive maintenance, major rehabilitation, and capital improvement projects.

The selection of certain GWAs will cause RAILER to ignore certain localized track defects. For example, if you desire to upgrade rail from 90 lb/yd to 115 lb/yd, any defects in the 90 lb/yd rail are ignored because they go away when the rail is upgraded.

The table below is a listing of what localized track defects are ignored when certain GWAs are used. Not all GWAs result in localized track defect elimination. Only those that result in elimination are shown below.

Component	Global Work Action	Defects Fixed by GWA
Turnout	Replace # TO Rail	All Rail Defects within Turnout Boundary All F&OTM Defects within Turnout Boundary
	Reconstruct # TO w/ # Rail	All Defects within Turnout Boundary
	Resurface # TO	Clean Debris in Cribs in Turnouts Surface and Alignment (Fair) in Turnouts Surface and Alignment (Poor) in Turnouts
	Ballast Cleaning # TO	Clean Debris in Cribs in Turnouts Dirty Ballast within Turnout Boundary
	Out-of-Face Switch Tie Renewal in # TO	All Switch Tie Defects
	Replace # TO Components	All Switch Defects All Frog Defects All Guard Rail Defects
Rail	Replace Rail w/ # Rail	All Rail Defects Except Those in Turnouts All F&OTM Defects Except Those in Turnouts
	Reconstruct Rail w/ # Rail	All Defects Except Those in Turnouts
Ties	Out-of-Face Tie Renewal	All Tie Defects Except Those in Turnouts
Appliances	Install or Replace Bond or Ground	All Bond and Ground Defects
	Install or Replace Car Stop	All Car Stop Defects
	Install or Replace Car Bumper	All Car Bumper Defects
Grade Crossings	Replace Existing w/ ? Grade Crossing	All Grade Crossing Defects
	Clean Ballast in Grade Crossing	Dirty Ballast Defect
	Install Underdrains	All Subdrain Defects
Ballast/Subgrade	Mow Vegetation (within track limits)	All Vegetation Defects
	Spray Vegetation	All Vegetation Defects

	Ballast Cleaning	All Ballast Defects, except in Turnouts
	Add Ballast	All Ballast Defects, except geometry
	Add Ballast and Resurface	All Ballast Defects, except Turnout Line and Surface
	Track Resurfacing	All Geometry Defects, except in Turnouts
Rail	Rail Grinding	Corrugation, Flaking, Head Checks, Surface Spalls, Shelling, Overflow
Drainage	Clean Ditches	Ditches-Restricted Flow
	Clean Culverts/Drains/Storm Sewers	Culverts-Restricted Flow, Drains-Restricted Flow, Storm Sewers-Restricted Flow
Rail Crossings	Tighten Bolts in Rail Crossing	Loose Bolts
	Replace Rail Crossing	All Rail Crossing
F&OTM	Joint Tightening	Loose Bolts
	Joint Lubrication & Tightening	Loose Bolts

RAILER will calculate the appropriate track length (quantity) for GWA application. This is typically rail length for rail, track length for tie and ballast, crossing length for grade crossings, and each for turnouts, appliances, etc. RAILER will use the unit costs established for the GWA cost list and multiply them by the appropriate inventory amount. Special M&R issues associated with turnouts, the GWAs for rail replacement, tie replacement, reconstruction, and ballast cleaning necessitates quantity adjustments. Rail, track, ties, and ballast inventory amounts included in a project are reduced by the length of the turnouts included in the project. Turnout lengths are based on the AREA design lengths, but the actual lengths may vary due to the lack of the requisite number of installed switch ties. The GWAs that result in quantity adjustments are listed below.

Global Work Action	**Grade Crossing Adjustment**	**Turnout Adjustment**	**Unballasted Bridge Deck Adjustment**
Reconstruct	No	Yes	Yes
Replace Rail	No	Yes	No
Out-of-Face Tie Renewal	No	Yes	Yes
Clean Ditches	Yes	No	Yes
Vegetation Removal	Yes	No	Yes
Shoulder Ballast Cleaning	Yes	No	Yes
Ballast Cleaning	Yes	Yes	Yes
Resurface (no add'l ballast)	Yes	Yes	Yes
Resurface (w/ add'l ballast)	No	Yes	Yes
Add Ballast	No	No	Yes
Install Stabilizing Underlayer	No	Yes	Yes
Install Filter Fabric	No	Yes	Yes

Since virtually every track begins at a turnout, an adjustment is needed for these turnouts, as well. However, since multiple turnouts may be in the preceding track, RAILER doesn't know what that turnout leads to the track in question. Thus, the turnout size is unknown (in Version 5.0). To compensate if the track begins at a turnout, RAILER will reduce the GWA quantity by 90 feet to account for the estimated length of that turnout. This may result is some quantity error.

This current version does NOT adjust GWA quantities if the track ends in a turnout that is included in another track. An example of this in your "Example1" database is Track P. A method for adjusting these specific track GWA quantities when developing a M&R plan is to shorten the track length (see "Network Information," above) by the length amount of the track ending turnout. The length can be adjusted back once the plan is developed.

The combining of GWAs allows you to plan for the required work actions and accurately estimate the work. If, for example, you desire to clean ballast for an entire track, including turnouts, you would need to select the GWAs for ballast cleaning and ballast cleaning in turnout. The key is to string (combine) all of the desired GWAs for a project.

Appendix B – *Updating an Existing RAILER GIS Application (Project)*

Updating Views when Standards are Added or Deleted

1. Open RAILER GIS either through RAILER or directly from ArcView. If opening from ArcView, ensure that the applicable "project" is selected.
2. Highlight all of the views by clicking on them and delete each one.
3. Click on the scripts option. Highlight "AddTheme" and click "Run." RAILER GIS will prompt you for which layers to add. Selected any or all desired layers that you wish to display.
4. From scripts highlight "TableMerge" and click "Run."
5. From scripts highlight "LoadLegends" and click "Run."

Adding New Segments

1. Open a "new" project in ArcView by clicking on "file – new." It is recommended that this be done directly from ArcView.
2. You first need to add a new "View". Click the "new" button when "Views" are active. From the "View" menu, choose "Add a Theme." From the selection window open the shapefile that is used for the railroad theme in your project. Note: if you do not know the name of the file, reopen the RAILER GIS project, open any view, and highlight the railroad layer. Go the "Theme" menu and choose "properties." The window that appears will contain a source field. This is the shapefile name and location.
3. From the Theme menu, choose "Start Editing". Using the editing tools within ArcView to add the new segment.
4. From the Theme menu, choose "Table." The attributes table for the shapefile will be displayed. The segment selected in the "View" should be highlighted in the table. Click on the  button. Find the new segment in the table and add the correct Segment ID to the "Segmentid" field.
5. Save the edits to the shapefile and exit the project.
6. The next time the RAILER GIS project is opened it will reflect the changes.

General Notes

1. Do not change the directory structure.
2. The "AddTheme" script is set up for AutoCad drawings. If Microstation themes are to be used, comment out the 6 lines below the AUTOCAD FIELDS block and uncomment the 10 lines below the MICROSTATION FIELDS block. Lines in scripts are commented out by placing an apostrophe at the beginning of the line. The script must then be compiled before running. This is done by simply clicking the check button at the top of the screen.
3. The turnout and segment ID's must be exactly the same as they appear in RAILER or that row will not be linked. The link will occur when the error is corrected.

Appendix C: *Setting up a new RAILER GIS Project*

The steps below will set up an ArcView project for use with RAILER GIS. This is a "one-time" process used to create a RAILER GIS display for your network.

1. Divide your track network into segments on the AutoCAD or MicroStation maps.
2. Install SQL drivers if they are not already installed.
3. Double-Click on "32bit ODBC" from Control Panel.
    a. Click the "Add" button.
    b. Choose "Microsoft Access Drivers" from the list.
    c. In the "Database Source Name" field, enter the name of the RAILER database ("example").
    d. Under Database, click the "Select" button and choose the .mdb file for the RAILER database (e.g. "c:\railer50\data\example.mdb").
4. Start ArcView 3.0
5. Open the "c:\railer.gis\railgis.apr" project.
6. Choose the "Extensions" option from the "File" menu. Enable the "CAD Reader" functionality.
7. Click on "Scripts" at the left side of the project window. Highlight "AddTheme" and click the "Run" button at the top of the project window.
    a. Themes can be any data source recognized by ArcView including AutoCad and MicroStation.
    b. You will be prompted to add Fence, Building, Road, and Turnout layers if desired.
    c. If the Theme Properties window appears, click on "Drawing" at the left of the screen and highlight the desired layer number.
    d. You will then be prompted to add a Railroad Layer. This layer must be added.
    e. Sample railroad and turnout layers have been included in rail.shp and turn.shp.
    f. When turnout and/or railroad layers are added, they will be converted to shapefiles and tables will be opened to identify features.

g. Click the  button at the top of the screen to enable the arrow cursor.
h. Highlight a row in the table - the row and its corresponding entity (turnout or segment) on the map will be highlighted in yellow.

i. Click the  button at the top of the screen to allow table editing.
j. Click in the TurnoutID or the SegmentID column of the highlighted row and enter the proper ID.
k. It may be helpful to use the  and  buttons to zoom in and out of the map.
l. Continue this process until all rows have been identified with a valid ID. Choose "Stop Editing" from the "Table" menu.
m. Features in shapefiles can be added, deleted, or combined.

8. Click on "Script" at the left side of the project window. Double-click on "TableMerge".
   a. Scroll to the line that reads "SQL = SQLCon.Find("MS Access 97 Database")".
   b. Replace "MS Access 97 Database" with the name of the database being used from instruction 3.c. Be sure to keep the quotation marks around the name (SQL = SQLCon.Find("example")).

   c. Click the  button at the top of the screen and close the script window.
   d. Highlight "TableMerge" and click on "Run" button at the top of the project window.
9. Click on "Scripts" at the left side of the project window. Highlight "LoadLegend" and click the "Run" button at the top of the project window.
10. Save the project before exiting. The project may be renamed at this time.

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